

GETTING MAXIMUM SHARPNESS

Jim Doty, Jr.



Sunflowers, Colorado

Although there are times that you may want a totally blurred photograph for artistic reasons, most of the time, photographers want some part of their image to look sharp, if not most of the image. The keys to sharp images are good photographic techniques, low ISO settings (with a digital camera), good film (with a film camera), and good equipment.

Some photographers think the key to sharp pictures is to find the best possible equipment, but that can be an expensive proposition and it doesn't always lead to sharper pictures. Using good techniques with average equipment will produce better pictures than using the best equipment with sloppy techniques. While poor quality equipment can hold you back, you don't need the "best of the best" camera gear to create sharp images. In other words, work on your technique FIRST before you go out and buy new equipment.

Here are some steps to sharper images.

1. Minimize camera movement. Put the camera on a tripod, bean bag, or other stable support. Use a cable release to fire the shutter (or the camera's self timer), especially at slower shutter speeds. This will keep you from jiggling the camera when you fire the shutter. Consistent use of a tripod will do more to increase sharpness on your film/digital sensor than almost any other single thing you can do. Advice for choosing a tripod is [here](#).



2. If you handhold the camera, remember the handheld rule: Use a shutter speed at least as fast as the reciprocal of the lens focal length in use. For example, use 1/50 second or faster with a 50mm focal length. Use 1/200 second or faster with a 200mm focal length. The handheld rule is not adequate for large enlargements. For big prints, use a faster shutter speed than the "handheld rule" suggests.

3. When shooting handheld, use lenses/cameras that help minimize "photographer movement". Modern vibration reduction technology will allow you to handhold your camera/lens at a shutter speed 2 or 3 stops slower than would ordinarily be possible. Canon Image Stabilization (IS) lenses really do let you handhold at slower shutter speeds. So do Nikon's Vibration Reduction (VR) lenses. Other manufacturers have lenses or camera bodies that minimize any movement on your part while you take the picture. Remember that image stabilization is to stop blurring from photographer movement, not subject movement.

4. When handholding your camera/lens, grip the camera with your right hand, and cradle the camera/lens in your left hand so it is well balanced. For horizontal photos, rest both of your elbows on your chest and pull the camera into your face for extra stability. For vertical photos, rest your left elbow on your chest. Even better, lean your elbows on something solid for support, like the back of a chair or a fence railing or whatever else is handy. Leaning against the wall of a building or a tree or a light post will add extra stability when you are standing.



5. With a digital camera, use the lowest ISO setting that will allow you to have the shutter speed you need to stop motion, and the aperture you need for enough depth of field.

6. With a film camera, use the sharpest films the light and situation will allow. Slide Films: Fuji Provia 100F, Fuji Velvia 50 (rated at a film speed of 40), Kodak E100VS, Kodak E100SW, Fujichrome Provia 100 100. Negative films: Kodak's Royal Gold 100, and Fuji's Reala. For a low light slide film, try Kodak E200 pushed one or two stops. Or try Fuji's MS 100/1000 or Provia 100F pushed one or two stops. For negative films, try Fuji Superia 400 and 800, or Kodak Royal Gold 400 and 800. In low light with a moving subject it is better to have a sharp subject on fast, grainy film than a blurred subject on slow, sharp film (unless you are specifically going for the blurred effect). Use the slowest speed film the light and your subject will allow.

7. Use sharp lenses. A quality, sharp lens is more important than a fancy camera body . A lens in the mid price range will usually give your the best sharpness per dollar value. If you find three telephoto zoom lenses with the same approximate focal length range that cost \$200, \$400, and \$1000, the \$400 dollar lens will probably be your best choice. A \$400 lens will usually be much sharper than a \$200. The \$1000 lens may only be a tiny bit sharper than the \$400 lens, not enough to make the extra cost worthwhile. Read the lens tests in Popular Photography magazine. Check out the lens tests at PhotoDo.com, and read the PhotoDo tests results I have collected [here](#).

8. Use the sharpest apertures possible, these are the middle apertures on most lenses . On a zoom lens, f8 will be sharper than f4 or f22. All lenses have some optical aberrations which show up at the widest apertures. All lenses suffer from a loss of sharpness due to diffraction at their smallest apertures (usually around f16 or f22 depending on the lens). So the middle apertures are sharpest. Sometimes you are forced into a trade off between increased depth of field at smaller apertures and a less sharp image due to diffraction.

9. Choose the sharpest focal lengths. When you are shooting at a focal length that is covered by two of your lenses, use the one that is sharpest at the focal length. Most lenses are sharper in the middle of their focal length range. Most telephoto zoom lenses are sharper at the shorter end than the longer end. If you have a 24-105mm zoom lens, and a 70-200mm zoom lens, the 70-200mm lens will be sharper at 70 -105mm than the 24-105mm lens. Wide angle zoom lenses are usually sharpest at the middle and long end of their zoom range. You can test and compare your lenses using the advice in [this article](#).

10. Prime (single focal length) lenses are usually sharper than zoom lenses.

11. Focus carefully on your subject.

12. Be sure you have enough [depth of field](#) (the near to far sharpness in an image) for the scene you have in mind. In near to far scenics when you want a lot of depth of field, use the [hyperfocal distance](#) to maximize sharpness across the whole image. Check the depth of field with your camera's depth of field preview button. Preview depth of field with your digital camera's "live view" mode, if your camera has that feature. Use a smaller aperture if you need more depth of field. See the link to my book (below) for detailed information on controlling depth of field.

13. Use lens hoods to prevent flare. Choose the right hood that is designed for each of your lenses.



A magpie checks out the lens hood on the front of this telephoto lens

14. When the sun is in front of you but not in the picture, use your hand or a hat to keep direct sunlight from hitting your front lens elements. This will help prevent flare.

15. Use quality filters. Choose name brand filter manufacturers (like Hoya, Tiffen, Cokin, Canon, Nikon, B+W, Heliopan, Hi-Tech, and Singh-Ray). Multi-coated filters are best. Take off filters when you shoot directly into bright light sources such as the sun or Christmas lights.

16. Use "mirror lockup" with long lenses (200mm and longer) at slow shutter speeds to eliminate picture blurring vibrations from mirror slap. If you don't have mirror lockup, avoid these shutter speeds if at all possible: 1/15 (the worst), 1/30 and 1/8. Change your aperture (film camera) or ISO (digital camera) to get a sharper shutter speed (faster than 1/30 second or slower than 1/8) second). Theoretically, you don't need to use mirror lockup at focal lengths shorter than 100mm, but for maximum image quality at slow shutter speeds, mirror lockup is a little extra sharpness insurance. Some cameras allow you to combine mirror lockup with a two second self timer - a great way to maximize quality when doing landscapes or closeup work.

17. Minimize subject movement. Use a shutter speed fast enough to freeze the motion of your subject (if you want to freeze your subject).